



DEPARTMENT OF CIVIL ENGINEERING

UNIVERSITY OF ILLINOIS

ENGINEERING OPEN HOUSE PROGRAM

MARCH 8 & 9, 1968



## WELCOME

We are happy to welcome you to the 1968 Engineering Open House and in particular the new Civil Engineering Building. The Civil Engineering Department has developed a number of excellent displays to show the interests and activities of Civil Engineers in the world today. In addition, a number of our laboratories will be open for inspection. Through the displays the prospective student will be able to see the extent of a future career in Civil Engineering.

## EXHIBITS

### THE CHALLENGE TO CIVIL ENGINEERS

The purpose of the Student Chapter exhibit is to introduce our visitors to the broad range of disciplines which are grouped together under civil engineering. It provides a frame of reference for the other displays dealing with particular aspects of civil engineering and the studies of our students.

The student chapter of the American Society of Civil Engineers serves to introduce the student to his profession. Through meetings and direct participation in his own student society he has an opportunity to both advance his knowledge through contact with practicing engineers and to learn the meaning of professional life.

Presented by the: Student Chapter ASCE

### COMPUTER SOLUTIONS OF CIVIL ENGINEERING PROBLEMS

Computers are extensively used today in structural analysis, soil mechanics, surveying, traffic flow, hydraulics, and many other branches of Civil Engineering. For example, computer programs have simplified the task of the engineer in analyzing a bridge truss, or in reducing traffic survey data to meaningful figures.

COGO (coordinated geometry) is a computer language which can be applied to a variety of geometric problem areas dealing with points, lines, curves, and polygons. The language is keyed to the terminology of the civil engineer, and the system can be applied to such civil engineering problem areas as surveying, mapping, site planning, highway design, etc.

Student Chairman: Andrew Mera  
Faculty Advisor: John W. Melin

### MATERIALS FOR CONSTRUCTION

From the very beginning of civilization, man has utilized the abundant resources of nature to provide him with shelter from the elements, fortifications against the enemy, places of public worship and governmental activity, and avenues of conveyance for both vehicles and water. Many of these facilities have, through the years, served not only in their intended functional capacity, but also as lasting tributes to man's early creative artistry. Today, three materials in particular: steel, concrete, and wood, comprise the major building elements which, backed by years of experimental research and combined with the latest techniques of engineering analysis, enable the civil engineer to design and erect the sophisticated facilities demanded by our present society. The display, "Materials for Construction," traces the historical development of these three major materials, and describes those of their physical and mechanical properties which permit the engineer to utilize them effectively in such a variety of applications as long span bridges, modern skyscrapers, massive dams, and an ever-expanding network of transportation systems.

Student Chairman: James D. Spencer  
Faculty Advisor: James B. Radzinski

### BRIDGE AND BUILDING DESIGN

Glued-laminated wood arches form the main structural system of many modern buildings, and a small-scale arch such as might be used to support a church roof is displayed. A plywood-

timber box-beam is a less well known but useful structural member suitable for carrying large loads at a minimum cost in materials, and a beam capable of carrying a 2600 lb. load over an 8-ft span is shown.

Two common reinforced concrete structural systems are displayed. A retaining wall and part of a building frame have been constructed so that the reinforcing steel "skelton" within the concrete can be easily seen.

Student Co-Chairmen: Donald G. Miller  
Robert L. Jefferies, Richard A. Weber  
Faculty Advisor: W. L. Gamble

### TRANSPORTATION

The transportation area display will depict how several modes of transportation can be incorporated into an integrated system. Emphasis will be placed on modes of transportation for the future with special emphasis on the interfaces between the various modes. A terminal will be displayed showing the linkage of the various modes at the interface. The various modes of transportation will be displayed by means of models, posters, photographs, and so forth.

The exhibit on a side track of the Illinois Central Railroad at Stadium Drive and Neil Street will display modern railroad equipment such as a diesel electric locomotive, passenger cars, a caboose, modern freight cars and a rail defect detection car. This equipment is being furnished as a courtesy of the Illinois Central Railroad. Everyone is welcome aboard the train for a guided tour and an unusual opportunity to view the inside of this modern equipment. Bus transportation will be provided between Civil Engineering Building and the track display according to a schedule posted at the railway exhibit.

Student Chairman: Terry Foley  
Faculty Advisor: E. J. Barenberg

### OCEAN ENGINEERING

Ocean engineering is concerned with many engineering aspects of the ocean and the ocean bottom. The exhibit

and presentation here is concerned with the physical properties of the material on the ocean bottom. The tower-like apparatus displayed rests on the ocean floor when set up for operation. It is equipped with devices to measure the shear strength and bulk density of the soil on the ocean bottom. It can operate in depths as great as 15,000 ft and penetrate as much as 9 ft into the ocean floor. A slide presentation shows the operation of the apparatus at sea and presents additional information on ocean engineering.

Faculty Advisors: M. T. Davisson  
A. F. Richards

### PHOTOGRAMMETRY, GEODESY AND SURVEYING

Surveying in one form or another has been practiced throughout the world for thousands of years. Nearly every civil engineering project employs surveying and mapping in some phase. This is accomplished either by using direct measurements made by means of optical and electronic instruments, or by applying photogrammetric methods in which measurements are extracted from aerial photographs by means of extremely precise instruments. The exhibit consists of some of the more mobile instruments used. Those interested in seeing larger equipment are invited to the second floor of the Woodshop Building.

Student Chairman: R. A. Stacy  
Faculty Advisor: S. Weissman

### WATER RESOURCES ENGINEERING

Water not only serves as a vital substance for human existence but it also plays an important role in advancing civilization. Water resources engineering includes such items as drainage, hydraulics, irrigation, flood-control, hydropower and hydrology. This display is intended to demonstrate some of the ways that water resource developments are used for conservation and use of water to improve man's standard of living.

Student Chairman: Stanley Swearingen  
Faculty Advisor: Dale D. Meredith



## WATER SUPPLY AND WASTE DISPOSAL FOR A MODEL CITY

This display shows water and waste treatment for a model community. Water entering from a reservoir is purified and distributed to domestic and industrial users. Wastes from these consumers are passed through treatment facilities giving clear water as a final effluent. Direct discharge of untreated sewage into a stream and the resulting pollution are also shown.

Student Chairman: Bruce Scott  
Faculty Advisor: John T. O'Connor

## MOVIES DESCRIBING CIVIL ENGINEERING

Movies will be shown in Room 1215 of the Civil Engineering Building on a continuous basis. Representative titles to be included are:

"BUILDING THE ACACIO AVENUE RESERVOIR"  
"NEW DEVELOPMENTS IN SLIP-FORM PAVING"  
"THIS IS MARINA CITY"  
"CHALLENGE AT CARQUINEZ"  
and "THE SUSPENSION BRIDGE"

ALL EXHIBITS ARE LOCATED IN THE CRANE  
BAY, FIRST FLOOR, CIVIL ENGINEERING  
BUILDING

## LABORATORY TOURS

### STRUCTURAL MODELS LAB

The structural models lab, B119 CEB, will be open. Models representing five-story reinforced concrete frames have been and are being tested. Most of the frames, which are 8 ft tall, had wall panels made of small-scale brick in-filled into the frame. The investigation is to determine the influence of the "non-structural" masonry wall on the strength and stiffness of the frames when subjected to horizontal forces such as may result from winds, bomb blasts, and earthquake.

Models representing closure slabs for missile silos remain from a recently finished investigation.

### OCEAN ENGINEERING

The Marine Geotechnique Labs in room 128 Natural History Building will be open (The Natural History Building is located immediately to the east of the Illini Union). Equipment is on display for nondestructive isotope, x-ray, and ultrasonic analytical methods in the laboratory and in-place on the seafloor. The practical application of these stu-

dies is the prediction of the bearing capacity of sea-floor sediments and the amount and rate at which any object or installation might settle following its emplacement on these sediments as a result of consolidation.

### SANITARY LABS

The sanitary engineering laboratories on the fourth floor of the Civil Engineering Building, are open to visitors. Equipment and methods for sampling and analysis used in water and air pollution control will be demonstrated.

### SOIL MECHANICS TESTING LABORATORY

In the soil mechanics testing laboratories, Rooms B217 - B221, Civil Engineering Building, typical apparatus for the determination of the engineering properties of soil is on display.

The various laboratories in the Civil Engineering Building can be reached from the lobby (follow the signs) by either the stairs or the elevator. The Sanitary Labs are on the fourth floor and Soils and Structural Models Lab are in the basement.